

ADEMCO

INSTALLATION INSTRUCTIONS

No. 1877
ADVANCED
SIGNAL PROCESSED
PASSIVE INFRARED
MOTION DETECTOR

MARGIN LINES INDICATE PRINCIPAL CHANGES IN THIS 1/87 ISSUE

GENERAL INFORMATION:

The No. 1877 PIR provides 12 zones of wide-angle coverage with a range of up to 40 feet, or 11 zones of narrow coverage with a range of up to 70 feet and has the following important features.

- Quad element pyroelectric sensor providing the reliability of two completely separate dual detectors covering the same area.
- High precision, computer designed parabolic optical system.
- Low current drain which allows for extended system power source battery life.
- Preset zones for fast and easy installation
- Wall/corner mounting plate
- Dual channel signal processing for reduced false alarms
- Pulse Count Capability for Enhanced False Alarm Immunity
- 6V to 12V.DC operation

The No. 1877 must be powered from a filtered 6V.DC to 12V.DC source that can provide at least 4 hours of standby power. The No. 495 Power Supply which can be plugged directly into any 24 hour 120V.AC outlet can be used as a convenient source of 6V.DC having up to 12 hours standby

The detector is designed to operate at all times. The LED on the unit will light whenever motion is detected.

PRINCIPLES OF OPERATION:

The optical system divides the area into a series of protected zones. A quad element sensor measures the level of infrared energy in each zone. When an intruder crosses or enters any zone, an alarm condition will be reported.

The detector is configured with a quad element sensor and two independent signal processing amplifiers. In effect, two passive infrared sensors are sharing a common optical system. Both sensors must detect motion at the same time for the PIR to report an alarm. In this way, immunity is provided against false alarms attributed to channel noise and random detector disturbances while "catch" performance is not compromised.

COVERAGE CONSIDERATIONS AND TYPICAL LAYOUTS:

The range will depend upon the mirror system in use. Protective patterns are shown in Diagrams 1 and 2. However, the unit may be mounted at other heights with modified range coverage as shown in Diagram 3.

"Dead Zone" Caution: Note in Diagram 1 that a "dead zone" is indicated, within which a person could be moving and not be detected by any of the unit's protective zones. Other dead zones may occur between the detector and the downward fields of view as the unit's mounting height is increased.

As shipped from Ademco, PIR coverage is set for wide angle shorter range. **TO CHANGE TO LONG RANGE PROTECTION**, follow the mirror change instructions packed with the long range mirror.

Selecting a Mounting Location:

The No. 1877 Passive Infrared Detector responds to changes in energy which occur when an intruder moves into or out of a protective zone. Best coverage will be obtained if the mounting site is selected such that the likely direction of intruder motion is ACROSS the pattern.

Passive I.R. units are remarkably resistant to false alarm hazards, but the following recommendations should be observed:

- Avoid locating unit where central heating radiators, flames, or heating outlet ducts are within the protective zones.
- Avoid locating the unit in direct sunlight or directly above strong sources of heat.
- Avoid locating unit on unstable surfaces.
- Avoid running alarm wiring close to heavy duty electrical cables.

INSTALLATION AND WIRING:

Mounting:

1. Mount the wall plate to a firm vertical surface (flat on wall or in corner), as shown in Diagram 4, at the recommended height

(see previous section). Orient the plate so that the rectangular cutout in the plate is at the bottom. If wiring is provided from a hole in the mounting surface, locate the mounting plate so that the wiring hole is centered horizontally within the rectangular cutout in the plate and the bottom edge of the plate is positioned in-line with the center of the wiring hole. See Diagram 4, Detail A. This will align the wiring hole with the wiring entry in the case when the unit is secured.

Wiring holes should be no larger than 5/16" in diameter.

2. Remove the front cover from the detector.

3. Using the wire entry access at the lower rear of the case, carefully feed the wires through the foam comb in the entry and along the underside of the terminal block. Wire length should be adequate for connection to the PIR terminal block, but unnecessary splices and loops within the unit are to be avoided. **The foam seal should surround the wires and block drafts from entering the PIR enclosure.**

4. Attach the unit to the wall plate as follows: Engage all four hooks on the wall plate into the slots on the rear of the case (see Diagram 4) and secure the unit to the wall plate by pressing downward.

NOTE: With front cover secured in place, unit is locked to wall mounting plate. To detach unit from wall plate, front cover must be removed first.

Wiring Connections:

See Diagram 5 for connections, which should be made in this order:

1. Alarm Relay: To connect to a closed circuit protective loop see diagram.
2. Input 6V/12V.DC (+) and (-) Terminals: Connect these terminals to a 6V.DC to 12V.DC source that can provide 35 mA continuously. Note: Observe polarity! 6V.DC can be conveniently provided directly from any 24 hour 120V.DC outlet via a No. 495 Power Supply which plugs directly into the outlet.

OPTIONAL OPERATING MODES:

As shipped, each detector includes pulse count circuitry that provides stability in adverse environments to minimize false alarms. In this mode, the No. 1877 will normally signal an alarm within 3 to 4 steps, since the processing logic requires more complex motion than just a momentary event. The LED, however, functions as a walk test indicator operating independently of the processing circuit.

Instant Response Option:

For long range applications where the detector is used to protect narrow corridors, or where single protective zones are directed through doorways or room openings, the Instant Response Option must be used.

This option is programmed by cutting the BLUE jumper on the circuit board. See Diagram 5 for its location. Control signal voltage is not required. Use of this option will bypass the unit's pulse count logic and provide an instant alarm response when an intruder enters any single protective zone.

CAUTION: Any jumper that is cut must have its loose ends taped (or otherwise insulated) to prevent accidental contact with other points.

Intrusion Memory Option:

When used with a control that can provide a suitable switched voltage to the detector's control signal post (to signal whether the control is ARMED or DISARMED), the detector can be programmed by cutting the RED jumper (See Diagram 5 for its location) to provide intrusion memory as described in this section. **NOTE:** A push-on connector is provided for use on the CONTROL SIGNAL POST.

CAUTION: Before cutting the RED jumper, make sure that the control can provide the proper switched voltage signal to the + CONTROL SIGNAL terminal, as follows: System Armed: 0V. System Disarmed: 6-12V. (input

impedance: 400K ohms). Many Ademco control panels are sources of switched positive (+) control voltage signals. Some controls permit direct connection to the detector while others require the use of a No. 688/688-12 Opening/Closing Switching Module between the control and the detector. Consult your control panel instructions.

During the ARMED period, if an intrusion occurs in the protected area, the alarm relay will transfer and this fact will be stored in the detector's memory. When the system is subsequently disarmed, the LED will remain illuminated until cleared. **The LED memory can be cleared by momentarily ARMING and then DISARMING the system.** The LED will then respond ON and OFF normally to motion detected in the protected area during the DISARMED period.

TESTING:

IMPORTANT: Wait at least two minutes after applying power before attempting to walk-test unit.

Testing of the detector should be conducted with the protected area cleared of all people. In some business establishments, it may be more convenient to do this after the business is closed. The protective system's control should be disarmed during the procedure to prevent reporting unwanted alarms.

Walk-Test:

Replace the front cover and walk-test the unit. Test operation by walking through the protective zones and observing the walk-test LED. It will light whenever motion is detected.

The absolute range of all Passive I.R. units is subject to variation because of different types of clothing, backgrounds and ambient temperature. For this reason, ensure that the most likely intruder routes are well within the PIR's protective zones and that walk-testing is carried out along these routes.

MAINTAINING PROPER OPERATION AND COVERAGE:

In order to maintain the detector in proper working condition, it is important that the following be observed by the user:

1. Power should be provided at all times. The unit's DC source should have standby power available for at least 4 hours of operation during emergencies.
2. Units should never be re-aimed or relocated without the advice of the alarm company.
3. The physical surroundings of the protected area should not be changed. If furniture or stock is moved, or air conditioning or additional heating is installed, the system may have to be readjusted by the alarm service company.
4. Walk tests should be conducted at least weekly to confirm continued proper coverage by each detector.

TROUBLESHOOTING:

Trouble 1: UNIT GOES INTO ALARM INTERMITTENTLY FOR NO APPARENT REASON AND WALK-TEST LIGHT GOES ON WHEN ALARM CONDITION EXISTS.

CAUSE	REMEDY
A. Rapid change in IR level in a zone. Check for electrical or gas heaters, open flames, electric arcs, or any object in a zone which can change temperature rapidly.	Identify source of IR or temperature change. Reposition unit so that source of problem is no longer in a zone.
B. Drafts are creating motion in drapes, display material or overhead lighting fixtures.	Locate source of motion. Eliminate same and walk-test unit after motion source is eliminated.

Trouble 2: UNIT GOES INTO ALARM INTERMITTENTLY OR CONTINUOUSLY FOR NO APPARENT REASON AND WALK-TEST LIGHT DOES NOT COME ON WHEN ALARM CONDITION EXISTS.

CAUSE	REMEDY
A. DC voltage supply to detector from panel or power supply inadequate or absent. PROPER POLARITY MUST BE OBSERVED.	Check for proper DC voltage at detector. If absent, check for proper voltage at panel or power supply terminals with wiring disconnected. If present, wiring to detector is faulted. Check for open and shorted conditions in wiring. If proper DC voltage is absent, consult instructions for panel or power supply.
B. Protective Loop is interrupted.	Determine whether interruption is in protective loop wiring or at detector's alarm relay contacts. Disconnect protective loop at detector relay contact terminals and check continuity across terminals. If present, check protection loop wiring. If absent (and proper voltage is being supplied to the detector), return unit for service.

Trouble 3: RELAY OPERATES NORMALLY BUT WALK-TEST LIGHT DOES NOT OPERATE.

CAUSE	REMEDY
LED malfunction. Check for broken or shorted leads.	Return unit for service.

Trouble 4: AREA OF COVERAGE CHANGES.

CAUSE	REMEDY
A. Customer has repositioned furniture or equipment in premises.	Caution customer that changes in layout can affect coverage. Reposition the unit according to installation instructions. Be certain that unit has not been tampered with.
B. Mounting surface is unstable. A few degrees vertical shift can change range substantially.	Mount on secure surface.

Trouble 5: UNIT DOES NOT APPEAR TO BE OPERATING.

CAUSE	REMEDY
Unit is not receiving power.	Check for presence of 6V.DC to 12V.DC at terminals of unit. PROPER POLARITY MUST BE OBSERVED.

GENERAL SPECIFICATIONS:

Physical:	Width: 3-1/4"
	Height: 4-1/4"
	Depth: 2-1/8"
Electrical:	Voltage: 6V.DC to 12V.DC
	Current: 35 mA
	Standby: Power source used should be able to provide at least 4 hours of standby power.
	Relay Contacts: 1 Amp at 28 VDC

TO THE INSTALLER

Regular maintenance and inspection (at least annually) by the installer and frequent testing by the user are vital to continuous satisfactory operation of any alarm system.

The installer should assume the responsibility of developing and offering a regular maintenance program to the user as well as acquainting the user with the proper operation and limitations of the alarm system and its component parts. Recommendations must be included for a specific program of frequent testing (at least weekly) to insure the system's proper operation at all times.

WARNING

THE LIMITATIONS OF THIS PASSIVE INFRARED MOTION DETECTOR

While the Intrusion Detector is a highly reliable intrusion detection device, it does not offer guaranteed protection against burglary. Any Intrusion Detection device is subject to compromise or failure to warn for a variety of reasons:

- Passive Infrared Motion Detectors can only detect intrusion within the designed ranges as diagrammed in this installation manual.
- Passive Infrared Motion Detectors do not provide volumetric area protection. They do create multiple beams of protection, and intrusion can only be detected in unobstructed areas covered by those beams.
- Passive Infrared Detectors cannot detect motion or intrusion that takes place behind walls, ceilings, floors, closed doors, glass partitions, glass doors, or windows.
- Mechanical tampering, masking, painting or spraying of any material on the mirrors, windows or any part of the optical system can reduce the detection ability of the Passive Infrared Motion Detector.
- Passive Infrared Detectors sense changes in temperature; however, as the ambient tempera-

ture of the protected area approaches the temperature range of 90° to 105°F (32° to 40° C), the detection performance can decrease.

- This Passive Infrared Detector will not operate without appropriate DC power connected to it, or if the DC power is improperly connected (i.e., reversed polarity connections).
- Passive Infrared Detectors, like other electrical devices, are subject to component failure. Even though they are designed to last as long as 10 years, the electronic components could fail at any time.

We have cited some of the most common reasons that a Passive Infrared Motion Detector can fail to catch intrusion. However, this does not imply that these are the only reasons, and therefore it is recommended that weekly testing of this type of unit, in conjunction with weekly testing of the entire alarm system, be performed to ensure that the detectors are working properly.

Installing an alarm system may make one eligible for lower insurance rates, but an alarm system is not a substitute for insurance. Homeowners, property owners and renters should continue to insure their lives and property.

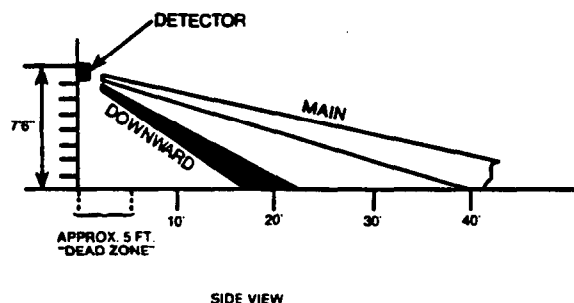
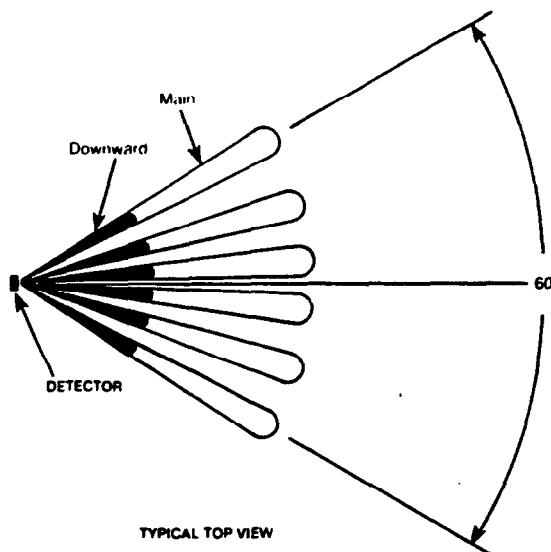


Diagram 1: WIDE ANGLE PROTECTION PATTERNS

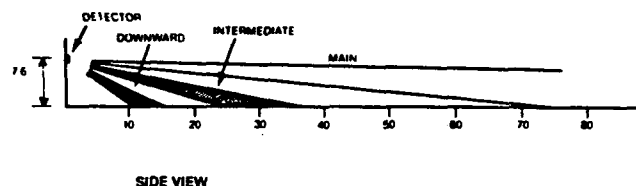
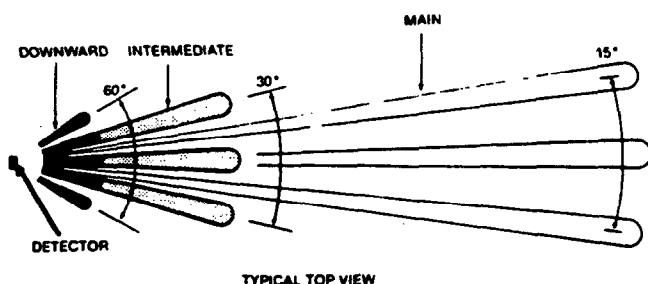


Diagram 2: LONG RANGE PROTECTION PATTERNS

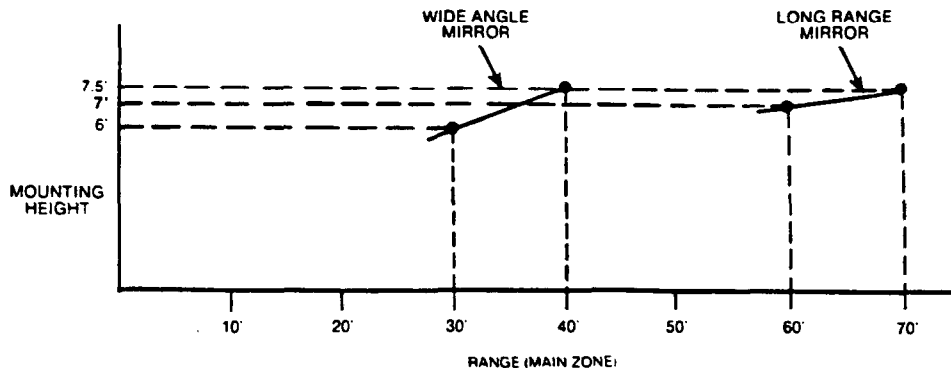


Diagram 3: MAIN ZONE RANGES AT VARIOUS MOUNTING HEIGHTS

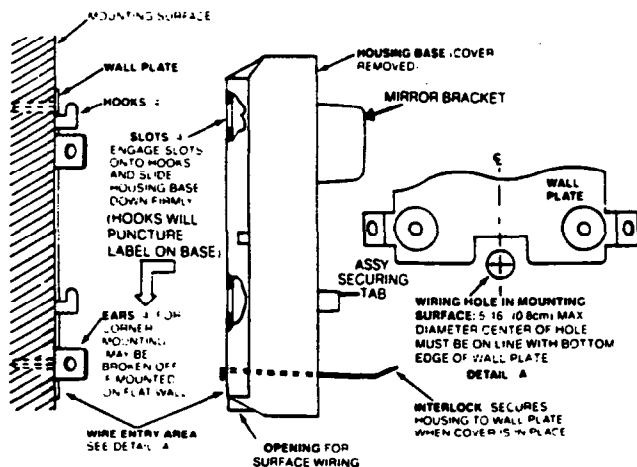


Diagram 4: MOUNTING DETAILS

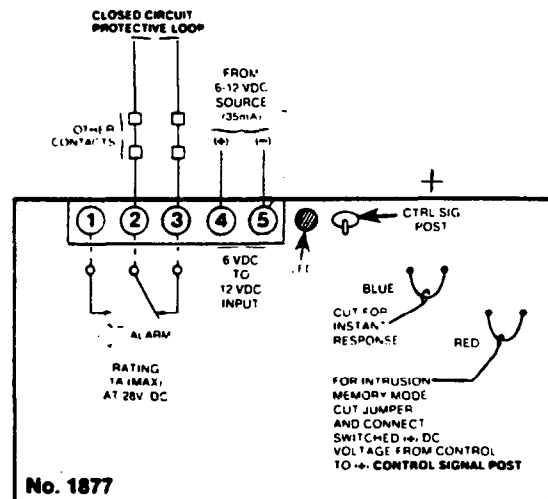


Diagram 5: CONNECTIONS, TERMINALS AND JUMPERS

LIMITED WARRANTY

Seller warrants its products to be in conformance with its own plans and specifications and to be free from defects in materials and workmanship under normal use and service for 18 months from the date stamp control on the product or for products not having an Ademco date stamp, for 12 months from date of original purchase unless the installation instructions or catalog sets forth a shorter period, in which case the shorter period shall apply. Seller's obligation shall be limited to repairing or replacing, at its option, free of charge for materials or labor, any part which is proved not in compliance with Seller's specifications or proves defective in materials or workmanship under normal use and service. Seller shall have no obligation under this Limited Warranty if the product is altered or improperly repaired or serviced by anyone other than Ademco factory service. For warranty service, return product transportation prepaid, to Ademco Factory Service, 165 Eileen Way, Syosset, New York 11791.

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